

## REVIEWERS COMMENTS AND RESPONSES OF THE AUTHORS

(Responses of author written in blue and marked with DW)

### COMMENTS TO THE AUTHORS

#### Editor/Chief Editor Landbauforschung

We will accept your manuscript, subject to major revision. Please take into account the reviewers' recommendations and write a short response to each of the comments. Please follow strictly the instructions for authors (to be found under landbauforschung.net). The revised version of your manuscript will be evaluated again by the Chief editor and, if necessary, by the reviewers.

#### Our comments by line

L 13. Unclear formulation, maybe delete '(...), but also to humans'

DW: I will delete this formulation since it refers to cases outside the focus of the article, e.g. altering the genetics of animals to promote xenotransplantation of organs, creating ideal test individuals for medical experiments or creating transgenic pigs rich in omega-3 fatty acid. These cases do not concern adaptation to husbandry systems but aim at creating animals better suited for human medical interest, medical research, or human nutrition.

L 47. 'Third': The order of bullet points is different to the order discussed in the text below. Please adapt DW: I will adapt the order.

L 48. 'breeding': Check correct word, maybe replace breeding by "growth and development"

DW: My mistake. Suggestion accepted.

L 72. 'Animal enhancement': This was introduced to be different case as 'shaping' and confuses the order build up before, please check on consistency.

DW: Despite being different cases, they both cases share the property of being compatible with the consideration of positive welfare under current empirical animal welfare approaches. I will alter the syntax of the sentence to point out that this paragraph focuses on 'shaping' while still pointing out, that 'enhancement' avoids the clashes with positive welfare consideration, as well.

L 102. 'clean conscious', exchange by "clean conscience"

#### Reviewer # 1:

##### General comments

This paper discusses philosophical questions and ethical issues in relation to the genetical fitting (adapting them to husbandry conditions) of food producing animals to reduce animal welfare problems. It considers mainly fitting by genetical engineering. The main conclusion is in the title.

The article addresses a relevant question that has become more topical in the light of recent advances in gene technology (but not applications). However, the text seems to suggest that gene technology is already applied to solve animal welfare problems (e.g. line 10 '...allowing us...' suggests the solution is available; line 12 'offered us countless new ways' again suggests these new ways are available; line 14 'they promise to avoid...' unclear how valid this promise is; line 16/17 'make use of these new possibilities' what concrete possibilities). To my knowledge this is not the case, not because the technology is not available but because the genetic basis of welfare issues is not clearly understood. [DW: I will clarify this point. The limited understanding of genetics and behavior is a rather practical aspect but doesn't do justice to the normative questions about what we should be allowed to do if we had the knowledge and the power.]

It is not explained why ethical questions about the fitting of animals are specifically related to genetic engineering. **[DW: I do justify that relation based on the possibilities of gene editing, etc.]** Aren't the same issues to be addressed in relation to selective breeding (or domestication for that matter)? **[DW: I do specifically refer to selective breeding, so I see no conflict here. But I do admit, that also domestication also forms a kind of fitting animals through conditioning. This however is an extra aspect I choose to leave out because of the limited space of the paper. This criticism is rather suited for a detailed discussion, not a position paper in my view.]** This is addressed on page 5 (lines 122-128) but should be discussed under description of the problem. **[DW: Here I disagree. I focus on genetic fitting and use that discussion to finally criticize fitting of animals in general. I strongly suggest leaving the order of my lines of argument as they are.]**

Several statements are made without any reasoning or argumentation as to why these statements would be valid (e.g. line 23-25 'The fitting ..... own sakes' why are animals ignored as individuals? **[DW: I will add, that an animal is treated as a container of welfare and only gets derivative indirect attention, which is meant by being ignored];** line 63/64 'An animal should not .... lifetime' why?; **[DW: The position paper doesn't leave space to explain the necessity of positive welfare in detail. I state this aspect as an aspect highlighted by Webster and I support it. I suggest leaving these lines as they are.]** line 82/83 'We can't just interfere .....please' why not?). **[DW: This last statement (l. 82/83) is simply a claim that I try to support in the rest of the paper.]**

The references are very dated and no modern approaches to animal welfare are considered.

**DW: To my knowledge no fundamental new advances in the normative understanding about animal welfare have been made during the last four years – even though I address empirical welfare approaches, I focus on their normative messages not their theories about empirically valid ways of assessment. New advances are constantly made in the field of empirical methods of measurement and refined criteria while the fundamental understanding of animal welfare as a normative issue hasn't really experienced big advances. Assessment and measurement cover a different perspective on animal welfare which is not at the center of my paper and doesn't challenge the ethical questions I highlight. This inter-disciplinary contrast would require a research paper of its own. A more specific example of a modern animal welfare approach that would enrich my paper would make it easier for me to check if I neglected crucial recent developments. I'd be grateful for such extra information.**

### Some specific points

L 13. What is meant by 'human ends'? **[so unclear???)**

L 13. What 'level' is referred to? What specifically can not be achieved by selective breeding but can be achieved by genetic engineering?

**DW: I will refer more specifically to the method of knocking out genes which allows for more direct alteration of properties of an animal.**

L 17. I am not so sure about this statement. Many discussions about animal welfare include 'breeding for robustness' or other changes in genetics (e.g. towards slower growing broilers).

**DW: I refer to 'breeding for robustness' resp. 'resistance to diseases' in the next sentence. I will make this clearer by adding a formulation. See next on comment L21.**

L 21. Curious what cases are meant

**DW: I refer here to cases of 'breeding for robustness', especially resistance to diseases. I will add this information as an example to make this more clear.**

L 23. 'no satisfying solution' why not satisfying, because the problem is not solved or because of the way the solution is approached?

**DW: Answer contained in the next sentence: 'The fitting of animals fundamentally ignores animals as individuals who deserve appreciation and consideration for their own sakes'. I still added the**

formulation 'and reduces the ethical idea about consideration of welfare to a mere biomedical technicality'.

L 48. This seems an over simplification of what is possible. I only know of the fact that presence of horns in cows is determined by a simple genetic factor.

DW: I will take out the tailless pigs in this line but refer to them later. I will also add a clarification, that my examples do include hypothetical cases for the sake of ethical contemplation. This may seem unusual to empirical applied disciplines but is a core factor of philosophical thinking and should be included to broaden the scientific perspectives in the journal.

L 54. Should be made clear this is a very unrealistic example and not even possible.

DW: I will clarify my formulation and change it to "pigs with only enough brain to allow biological growth yet not support consciousness". I hereby pick up a scenario discussed by Streiffer and Basl which addresses important philosophical issues.

L 59. Is meant 'customers' instead of 'costumers'? If so: what customers?

L 75-76. The presence or not of horns has effects on the social organization of a herd

DW: I will correct that mistake.

L 76. 'could be' is purely hypothetical

DW: 'Could be' refers to a possible option. Considering hypothetical scenarios is an important element of philosophical thinking. I will mention this particularity about philosophical approaches in the paper to allow for a better inter-disciplinary understanding.

L 77. Tailbiting is not only a problem for the bitten pig. So tailless pigs don't solve the problem.

DW: True. But I do not claim that tailless pigs are already the solution to all stress or other related welfare problems in pigs. I only address this example to illustrate that the shaping of animal bodies should be seen with a critical eye even independent of other welfare problems that are still active. I will make clearer that my argument addresses that act or 'shaping' itself independent of side-effects. My aim is not to list all welfare factors that are involved here, but to bring some attention to more fundamental ethical issues that are easily overshadowed by blatant welfare problems which are side effects of shaping.

L 88. 'Coping approaches' should be explained

DW: The position paper doesn't leave much space for a thorough explanation of what it means for an animal to 'cope' with its life situation. I suggest leaving this line as it is.

L 93-95. I don't understand the reasoning in this sentence DW: I will try to reformulate it.

L 104-105. Reference to consumptive habits comes out of the blue and relation to welfare issues should be explained

DW: The mentioning of consumptive habits refers to human intentions behind their actions towards animals and I argue (ll. 90-109) that these are part of animal welfare as a normative ethical concept. I suggest leaving these lines as they are.

L107-109. I don't understand the reasoning in this sentence

DW: I try to point out, that animal welfare expresses a felt concern about our actions towards animals, so it is fundamentally built upon the contemplation about what kind of moral agents we want to be as in 'Is this how we really should treat nature / animals / one another?'. Getting deeper into this would require a larger article about moral intentions and normative ethics as such. In this position paper I induce this kind of philosophical thinking to introduce the animal welfare community to philosophical as an example of what kind of out-of-the-box questions should be addressed apart from questions of pragmatism, assessment methods and improved criteria. I suggest leaving these lines as they are.

L 121. These 'existing animals' were also 'created'... DW: This seems a misreading of my point to me. The contrast is not between 'created' and 'existing' animals, but between those created to be 'less

liable to common welfare problems' and 'existing' ones, which haven't been manipulated in this way.

L 139. I don't see why these animals 'need less consideration'. So I don't follow conclusion in line 154-156.

DW: These animals need less consideration concerning specific elements of keeping them, as for example not having to improve temperature in a stall if robustness against high/low temperature is successfully enhanced in those animals. The whole idea behind fitting animals is being able to worry less about at least some singular aspects of their welfare. I do not claim that these animals need no kind of consideration at all – they will have to be fed of course. But this would rather be a point for a footnote which I can' use in this position paper.

#### Recommendation

I recommend major revision.

#### **Reviewer # 2:**

##### General comments

Given the constraints on position papers, I believe that this article is publishable as is. I believe that it does a reasonably good job of assembling philosophical arguments from the published literature in support of the claim articulated in the title. It proposes a criterion for distinguishing between acceptable genetic changes, such as those that focus on disease resistance, and dubious ones, such as those that are intended to allow a production practice that would otherwise be morally unacceptable to continue. In stressing intention, I believe that this criterion will prove difficult to operationalize in practice. It will be challenged by those who want claim that the underlying changes in animal genetics are so slight as to be indistinguishable, and it will invite disingenuous claims about an innovation's intended purpose. **[DW: I will add a short sentence at the end of §2 to point out, that even though we cannot reliably assess the ingenuousness of peoples' intentions, in the absence of a real moral dilemma to change animals so we can continue using them or sacrifice something fundamentally important, even honest intentions behind the fitting of animals betray the core idea behind the consideration of animal welfare].** But these are probably not points that it would be reasonable to take up in a short paper.

Here are just a few papers that could be incorporated into the review to strengthen it's argument:

Sandøe, Peter, Paul M. Hocking, Bjorn Förkman, Kirsty Haldane, Helle H. Kristensen, and Clare Palmer. "The blind hens' challenge: does it undermine the view that only welfare matters in our dealings with animals?." *Environmental Values* 23, no. 6 (2014): 727-742.

Sandøe, Peter, Birte Lindstrøm Nielsen, Lars Gjøøl Christensen, and Poul Sørensen. "Staying good while playing God-The ethics of breeding farm animals." *ANIMAL WELFARE* 8 (1999): 313-328.

Thompson, Paul B. "Why using genetics to address welfare may not be a good idea." *Poultry science* 89, no. 4 (2010): 814-821.

#### Recommendation

Minor revision needed

#### **FINAL ACCEPT**

**Editor/Chief-Editor Landbauforschung**

Landbauforschung: Accept

We are pleased to inform you that **we've accepted your revised manuscript "Position Paper: Why fitting animals is ethically dubious by itself"**, which you submitted to Landbauforschung – Journal of Sustainable and Organic Agricultural Systems.